

# EVALUATION SYSTEM OF VOCABULARY KNOWLEDGE LEVEL AND THE METHOD THEREOF

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## Field of the Invention

The present invention relates to an evaluation system of vocabulary knowledge level and the method thereof. More particularly, the present invention relates to a system that evaluates an user's vocabulary knowledge level and provides a plurality of words and phrases that matches user's level automatically according to the words or vocabularies entered by the user in a bilingual operating system. Therefore, before searching for a vocabulary, the user does not need to take numerous complicated tests for evaluating his vocabulary knowledge level.

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## Background of the Invention

Due to knowledge explosion and the progress of information technologies, people have more opportunities to be exposed to the rest of the world, and can readily obtain books or journals published in different languages. No matter how well people are good at foreign languages, they still more or less need the assistance of dictionaries while reading foreign-language publications. Except conventional dictionaries, bilingual vocabulary inquiry systems, such as English-Chinese/Chinese-English, Japanese-Chinese/Chinese-Japanese, Japanese-English/English-Japanese and English-Korean/Korean-English systems, etc., can also be utilized to obtain desired language

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information with more convenience and quickness.

However, with the conventional bilingual vocabulary inquiry systems, an user is only allowed to enter one word at each time of inquiry. For example, with a Far East English-Chinese Encyclopedia published by Far East Book Company of Taiwan, only one word is allowed to be entered at each time of inquiry. The inquiry method not only is inefficient, but also provides less information to the user. Moreover, when the user needs to look up a lot of words, the user has to spend a lot of time in entering those words one by one. Hence, the conventional bilingual vocabulary inquiry systems are very inconvenient for use.

Another conventional bilingual vocabulary inquiry system requires the user to take a plurality of tests provided by the conventional bilingual vocabulary inquiry system for determining the user's vocabulary knowledge level before the user can make an inquiry. Then, based on the user's vocabulary knowledge level graded from the tests, the conventional bilingual vocabulary inquiry system will first finds the words that are unfamiliar to the user and related to the word source, such as words, texts and documents, etc., entered by the user, and then displays the meanings of those words found.

However, since the user has to take tests every time before using the conventional bilingual vocabulary inquiry system, not only a lot of time is wasted, but also the user would be familiar with the correct answers of the tests after practicing the tests a couple of times, so that the user's vocabulary knowledge level used as a reference in the conventional bilingual vocabulary inquiry system cannot be obtained

correctly from the tests. Thus, for providing a proper and convenient inquiry method to the user, an evaluation system is needed to be developing.

### **Summary of the Invention**

In view of the background of the invention described above, the conventional bilingual vocabulary inquiry system utilizes some fixed tests to determine the user's vocabulary knowledge level before each time of inquiry. Not only a lot of time is wasted, but also the user would know the answers of the tests well after practicing a couple of times. Therefore, the vocabulary knowledge level obtained by utilizing the tests is inappropriate, so that the conventional bilingual vocabulary inquiry system cannot provide a plurality of proper vocabularies to the user.

It is the principal object of the present invention to provide an evaluation system of vocabulary knowledge level and the method thereof. By utilizing the present invention, an user does not need to go through the trivial tests before searching for vocabulary, and the user's vocabulary knowledge level can be detected and obtained automatically by evaluating the text entered by the user, so that the problem of evaluating the user's vocabulary knowledge level by an inconvenient method in the traditional inquiry system is resolved.

In accordance with the aforementioned objects of the present invention, the present invention provides an evaluation system of vocabulary knowledge level and the method thereof. In the present invention, based on a classification of vocabulary levels, the text entered by the user is first evaluated for obtaining the vocabulary levels

of the text. Then, according to the vocabulary levels of the text, the text is divided into a plurality of word groups, and then the evaluations procedure is performed for obtaining the user's vocabulary knowledge level. Therefore, without going through the trivial tests before searching for vocabulary, the user is able to correctly get the proper vocabularies and phrases that are unfamiliar to the user.

### **Brief Description of the Drawings**

The foregoing aspects and many of the attendant advantages of the present invention will become more readily appreciated as the same becomes better understood by reference to the following detailed description, when taken in conjunction with the accompanying drawings, wherein:

Fig. 1 shows a hardware structure diagram of a preferred embodiment of the present invention.

Fig. 2 is a flow chart showing the operational procedure for searching for vocabulary according to a preferred embodiment of the present invention.

Fig. 3 is a flow chart showing the operational procedure of the evaluation procedure step 207 shown in Fig. 2.

Fig. 4 is a table showing the classification of vocabulary levels in a preferred embodiment of the present invention.

Fig. 5 is a diagram showing several methods for evaluating user's knowledge level of a preferred embodiment of the present invention.

Fig. 6 is a first article in the preferred embodiment of the present invention.

Fig. 7 is a second article in the preferred embodiment of the present invention.

Fig. 8 is a third article in the preferred embodiment of the present invention.

Fig. 9 is a table showing the vocabulary levels and the word group levels by applying Method 1 on a combination of the first article, the second article and the third article simultaneously, according to the preferred embodiment of the present invention.

Fig. 10 is a diagram showing the total evaluation result according to Fig. 9.

Fig. 11 is a table showing the vocabulary levels and the word group levels by applying Method 2 on a combination of the first article, the second article and the third article simultaneously, according to the preferred embodiment of the present invention.

Fig. 12 is a diagram showing the total evaluation result according to Fig. 11.

### **Detailed Description of the Preferred Embodiment**

Referring to Fig 1, Fig 1 shows a hardware structure diagram of a preferred embodiment of the present invention. In Fig. 1, the hardware structure of the present invention comprises a read only memory (ROM) 101, a microprocessor 103, a random access memory (RAM) 105, a database module 107, a keyboard 109 and a display 111.

A text-source data 113 and an ID code 115 are keyed into the microprocessor 103 from the keyboard 109 when user wants to make an inquiry, wherein the text-source data 113 can be words, information related to the words or meanings of the words. Then, the vocabularies that are not under the user's vocabulary knowledge level are displayed on the display 111 by an inquiry procedure performed by the microprocessor 103 according to a bilingual dictionary stored in the database module 107. The ROM 101 is used to store the program of the evaluation system of the present invention, and the RAM 105 is used to save the temporary information of the evaluation system of the present invention. Moreover, a nonvolatile memory, such as

flash memory, electric erasable programmable read only memory and etc., can be used as the ROM 101 or for the implement of the database module 107.

In the following description, an English-Chinese bilingual dictionary inquiry system is used as an example to explain the operation of a preferred embodiment of the present invention, and the present invention can be also utilized in other bilingual dictionary inquiry system, such as an English-Chinese/Chinese-English, a Japanese-Chinese/Chinese-Japanese, a Japanese-English/English-Japanese, and an English-Korean/Korean-English bilingual dictionary inquiry system, etc.

Referring to Fig. 2, Fig. 2 is a flow chart showing the operational procedure of a preferred embodiment of the present invention. First, step 201 is performed for keying the text-source data 113 and the ID code 115 shown in Fig. 1 into the microprocessor 103 by an user from the keyboard 109. Secondly, step 203 is performed for identifying the user in the evaluation system of the present invention. If the ID code 115 has been stored in an user ID database of the database module 107, it means that the evaluation system has ever been accessed by the user, so that a record of the user's vocabulary knowledge level exists in the user ID database. Therefore, according to the user's vocabulary knowledge level previously stored, the vocabulary inquiry procedure step 209 is performed for searching for the text-source data 113, and then step 211 is performed for displaying the words and phrases that are unfamiliar to the user, and the meanings of the text-source data 113.

When the ID code 115 does not exist in the user ID database, step 205 is performed for checking the number of words of the text-source data 113. If the

number of words of the text-source data 113 is over a predetermined number, such as 5 or 6 words, then the evaluation procedure step 207 is performed for obtaining the user's vocabulary knowledge level according to the vocabulary level of each word in the text-source data 113. Then, according to the user's vocabulary knowledge level obtained in the evaluation procedure step 207, the vocabulary inquiry procedure step 209 is performed for searching for the text-source data 113, and then step 211 is performed for displaying the words and phrases unfamiliar to the user, and the meaning of the text-source data.

If the number of words of the text-source data 113 is less than a predetermined number, such as 5 or 6 words, the vocabulary inquiry procedure step 209 is performed directly for searching for the text-source data 113, and then step 211 is performed for displaying the meanings of the text-source data 133, since the number of words of the text-source data 133 is not enough for obtaining a proper user's vocabulary knowledge level by the evaluation procedure step 207.

Referring to Fig. 3, Fig. 3 is a flow chart showing the operational procedure of the evaluation procedure step 207 shown in Fig. 2. In the evaluation procedure step 207, step 301 of evaluating the words of the text-source data 113 is first performed for obtaining the vocabulary level of each word in the text-source data 113 according to a classification of vocabulary levels stored in the database module 107 as shown in Fig. 1. Then, step 303 is performed for dividing the text-source data 113 into a plurality of word groups having the same number of words, such as 5 or 6 words. Thereafter, step 305 of evaluating the plurality of word groups is performed for obtaining a plurality of word group levels for the word groups according to the plurality of vocabulary levels of

the plurality of words in each word group. Then, the step 307 is performed for obtaining the user's vocabulary knowledge level by calculating the average of the word group levels.

Referring to Fig. 4, Fig. 4 is a table showing the classification of vocabulary level in a preferred embodiment of the present invention. The classification of vocabulary level shown in Fig. 4 is stored in the database module 107, and is based on the vocabularies shown in the textbooks and reference books adopted by Taiwanese high schools, and the questions and review materials for TOEFL and GRE tests. Moreover, the classification of vocabulary levels can be modified when the present invention is utilized in other bilingual dictionary inquiry system.

Referring to Fig. 5, Fig. 5 is a diagram showing several methods for evaluating user's vocabulary knowledge level of a preferred embodiment of the present invention. As shown in Fig. 5, there are several methods for evaluating user's knowledge level. A predetermined level method 401 is to execute the vocabulary inquiry procedure step 209 shown in Fig. 2 for searching for the text-source data 113 according the user's vocabulary knowledge level that has been arranged in the evaluation system. A test method 403 is to execute the vocabulary inquiry procedure step 209 shown in Fig. 2 for searching for the text-source data 113 according the user's vocabulary knowledge level, wherein the user has to take several questions and test for determining his vocabulary knowledge level. An input method 405 is to determine the user's vocabulary knowledge level according to the user's academic degree entered by the user, and an evaluation method 407 is based on the text-source data entered by the user. Therefore, the preferred embodiment of the present invention provides a convenient, easy and



diversified evaluation process with several methods available for evaluating and obtaining the user's vocabulary knowledge level.

As shown in Fig. 3, by evaluating a word group, a word group level of the word group can be obtained. In a preferred embodiment of the present invention, Method 1 and Method 2 are used for evaluating the word group. If the word group contains 5 words, the equation of Method 1 becomes

$$S=[(W_1+W_2+W_3+W_4+W_5)/5] \quad (\text{Method 1})$$

wherein  $W_1$  is the vocabulary level of the first word of the word group;  $W_2$  is the vocabulary level of the second word of the word group;  $W_3$  is the vocabulary level of the third word of the word group;  $W_4$  is the vocabulary level of the fourth word of the word group; and  $W_5$  is the vocabulary level of the fifth word of the word group, and  $S$  is the word group level of the evaluated word group. By utilizing Method 1, the word group level  $S$  is the integral part of the average of the vocabulary levels of the words in the evaluated word group, wherein  $W_1$ ,  $W_2$ ,  $W_3$ ,  $W_4$  and  $W_5$  can be obtained from the evaluation based on the classification of vocabulary levels as shown in Fig. 4.

If the word group contains five words, the equation of Method 2 becomes

$$S=[(((W_1)^2+(W_2)^2+(W_3)^2+(W_4)^2+(W_5)^2)/5)^{1/2}] \quad (\text{Method 2})$$

wherein  $W_1$  is the vocabulary level of the first word of the word group;  $W_2$  is the vocabulary level of the second word of the word group;  $W_3$  is the vocabulary level of

the third word of the word group;  $W_4$  is the vocabulary level of the fourth word of the word group; and  $W_5$  is the vocabulary level of the fifth word of the word group, and  $S$  is the word group level of the evaluated word group.

Method 2 is first to calculate a plurality of square values each of which is the square of the vocabulary level ( $W_1, W_2, W_3, W_4$  or  $W_5$ ) of each word in the evaluated word group, wherein  $W_1, W_2, W_3, W_4$  and  $W_5$  can be obtained from the evaluation based on the classification of vocabulary levels as shown in Fig. 4, and then to compute an average value of these square values. After a square root value of the average value is calculated, then the word group level  $S$  for the evaluated word group can be known by taking the integral part of the square root value.

Referring to Fig. 6, Fig. 7 and Fig. 8, Fig. 6, Fig. 7 and Fig. 8 respectively are a first article, a second article and a third article in a preferred embodiment of the present invention, wherein the first article, the second article and the third article are taken from the text-source data 113 shown in Fig.1. For example, in the article as shown in Fig. 8, the first word group contains the words: "The(1) Joong-Ang(3) Ilbo celebrated its (1) 31st(5) anniversary(5)" wherein the numbers in the parentheses are the vocabulary levels of the words. By Method 1, the word group level is:

$$[(1+3+1+5+5)/5]=[3.0]=3,$$

whereas by Method 2, the word group level is:

$$[((1^2+3^2+1^2+5^2+5^2)/5)^{1/2}]=[(61.0/5)^{1/2}]=[3.49]=3$$

The word group level obtained above is shown in set 75 of the tables shown in Fig. 9 and Fig. 11, wherein Fig. 9 is a table showing the vocabulary levels and the word group levels by applying Method 1 on a combination of the first article, the second article and the third article simultaneously according to a preferred embodiment of the present invention, and Fig. 11 is a table showing the vocabulary levels and the word group levels by applying Method 2 on a combination of the first article, the second article and the third article simultaneously according to a preferred embodiment of the present invention. Moreover, referring to Fig. 10 and Fig. 12, Fig. 10 is a diagram showing the total evaluation result according to Fig. 9, and Fig. 12 is a diagram showing the total evaluation result according to Fig. 11.

By comparing Fig. 10 and Fig. 12, the distribution of word group levels evaluated by Method 1 mainly focuses on level 2, but comparatively, the word group levels evaluated by Method 2 on level 3. Therefore, Method 2 is a better choice method for treating the general articles.

In conclusion, the advantage of the present invention is to provide an evaluation system of vocabulary knowledge level and the method thereof. By utilizing the present invention, an user's vocabulary knowledge level can be obtained automatically without processing any tests in a bilingual vocabulary inquiry system, so that the words and related information that are unfamiliar to the user can be provided directly to the user according to the text-source data entered by the user without demanding the user to go through trivial tests. Therefore, the problem of evaluating the user's vocabulary knowledge level with an inconvenient method in the conventional inquiry system can

be resolved.

As is understood by a person skilled in the art, the foregoing preferred embodiments of the present invention are illustrated of the present invention rather than limiting of the present invention. It is intended to cover various modifications and similar arrangements included within the spirit and scope of the appended claims, the scope of which should be accorded the broadest interpretation so as to encompass all such modifications and similar structure.